

electrochemical and sulfuric acid molarity conditions of the battery provided that the metal cation impurity ion is not detrimentally desorbed or released under said conditions, soluble lead ion has a reduced affinity for bonding with the functional groups and said micronized porous organic polymer particles are accessible to the metal impurity ion containing electrolyte to allow said ion to permeate the internal surfaces of the micronized porous organic polymer particles.

Claim 2 (Once Amended) The separator of Claim 1 wherein the micronized porous organic polymer particles have acid functional groups.

Claim 3 (Once Amended) The separator of Claim 2 wherein the acid functional groups are aminophosphonic.

Claim 4 (Once Amended) The separator of Claim 1 wherein the micronized porous organic polymer particles have thiuronium functional groups.

Claim 5 (Once Amended) The separator of Claim 3 wherein the micronized porous organic polymer particles are cross-linked polystyrene and the cross-linking is by divinylbenzene.

Claim 6 (Once Amended) The separator of Claim 4 wherein the micronized porous organic polymer particles are cross-linked polystyrene and the cross-linking is by divinylbenzene.

Claim 7 (Once Amended) The separator of Claim 3 wherein the metal cation impurity ion is selected from the group consisting of antimony and iron.

Claim 8 (Once Amended) The separator of Claim 4 wherein the metal cation impurity ion is silver.

Claim 9 (Once Amended) The separator of Claim 1 wherein the number count is less than about one micron.

Claim 10 (Once Amended) The separator of Claim 3 wherein the number count is less than one about micron.

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Claim 11 (Once Amended) A silica filled polymeric separator useful as an electrolyte reservoir in a lead acid battery wherein the silica filled polymeric separator comprises an acid resistant metal impurity inhibiting amount of micronized porous organic polymer particles having functional groups on the internal surfaces of the micronized porous organic polymer particles which have a preferential affinity over lead ion for at least one electrolyte soluble metal cation impurity ion more nobler than lead at the discharge charge electrochemical and sulfuric acid molarity conditions of the battery provided that the metal cation impurity ion is not detrimentally desorbed or released under said conditions, soluble lead ion has a reduced affinity for bonding with the functional groups and macroporous particles having an average particle size distribution less than 25 microns and a pore size distribution which allows for a plurality of said micronized porous organic polymer particles to be associated with the internal porosity of said macroporous particles and said micronized porous organic polymer particles and macroporous particles are accessible to the metal impurity ion to allow said ion to permeate the internal surface of the micronized porous organic polymer particles.

Claim 12 (Once Amended) The separator of Claim 11 wherein the micronized porous organic polymer particles have acid functional groups.

Claim 13 (Once Amended) The separator of Claim 12 wherein the acid functional groups are aminophosphonic.

Claim 14 (Once Amended) The separator of Claim 11 wherein the micronized porous organic polymer particles have thiouronium functional groups.

Claim 15 (Once Amended) The [element] separator of Claim 12 wherein the micronized porous organic polymer particles are cross-linked polystyrene and the cross-linking is by divinylbenzene.

Claim 16 (Once Amended) The separator of Claim 13 wherein the micronized porous organic polymer particles are cross-linked polystyrene and the cross-linking is by divinylbenzene.

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Claim 17 (Once Amended) The separator of Claim 13 wherein the metal cation impurity ion is selected from the group consisting of antimony and iron.

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Claim 18 (Once Amended) The separator of Claim 14 wherein the metal cation impurity ion is silver.

Claim 19 (Once Amended) The separator of Claim 11 wherein the micronized porous organic polymer particles have a 50% number count less than about two microns.

Claim 20 (Once Amended) The separator of Claim 13 wherein the micronized porous organic polymer particles have a 50% number count less than about two microns.

Claim 21 (Once Amended) A silica filled polymeric separator useful as an electrolyte reservoir in a lead acid battery wherein the silica filled polymeric separator comprises an acid resistant metal impurity inhibiting amount of micronized porous organic polymer particles having functional groups on the internal surfaces of the micronized porous organic polymer particles which have a preferential affinity over lead ion for at least one electrolyte soluble metal cation impurity ion more nobler than lead at the discharge charge electrochemical and sulfuric acid molarity conditions of the battery

provided that the metal cation impurity ion is not detrimentally desorbed or released from the functional groups under said conditions, soluble lead ion has a reduced affinity for bonding with the functional groups and macroporous particles having an average particle size distribution less than 25 microns and a pore size distribution which allow for a plurality of micronized porous organic polymer particles to be associated with the internal porosity of said macroporous particles and said micronized porous organic polymer particles and said macroporous particles are associated with each other and silica through a cationic linking polymer and accessible to the metal impurity ion containing electrolyte to allow said ion to permeate the internal surface of the micronized porous organic polymer particles.

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Claim 22 (Once Amended) The separator of Claim 21 wherein the micronized porous organic polymer particles have acid functional groups.

Claim 23 (Once Amended) The separator of Claim 22 wherein the acid functional groups are aminophosphonic.

Claim 24 (Once Amended) The separator of Claim 21 wherein the micronized porous organic polymer particles have thiouronium functional groups.

Claim 25 (Once Amended) The separator of Claim 22 wherein the micronized porous organic polymer particles are cross-linked polystyrene and the cross-linking is by divinylbenzene.

Claim 26 (Once Amended) The separator of Claim 24 wherein the micronized porous organic polymer particles are cross-linked polystyrene and the cross-linking is by divinylbenzene.

Claim 27 (Once Amended) The separator of Claim 23 wherein the metal cation impurity ion is selected from the group consisting of antimony and iron.

Claim 28 (Once Amended) The separator of Claim 24 wherein the metal cation impurity ion is silver.

Claim 29 (Once Amended) The separator of Claim 21 wherein the micronized porous organic polymer particles have a 50% number count less than about two microns.

Claim 30 (Once Amended) The separator of Claim 23 wherein the micronized porous organic polymer particles have a 50% number count less than about two microns.

Claim 31 (Once Amended) The separator of Claim 21 wherein the polymeric separator is selected from the group consisting of polyethylene and polyvinylchloride.

Claim 32 (Once Amended) The separator of Claim 23 wherein the polymeric separator is selected from the group consisting of polyethylene and polyvinylchloride.

REMARKS

Applicant has submitted an information disclosure statement with this amendment. Applicant has amended Claims 1 to 32 to clarify certain language used in the claims and to provide proper antecedent support for certain words and phrases. Specific support for the phrase "50 percent number count less than about 2 microns" is found at page 17 lines 24 to 31.